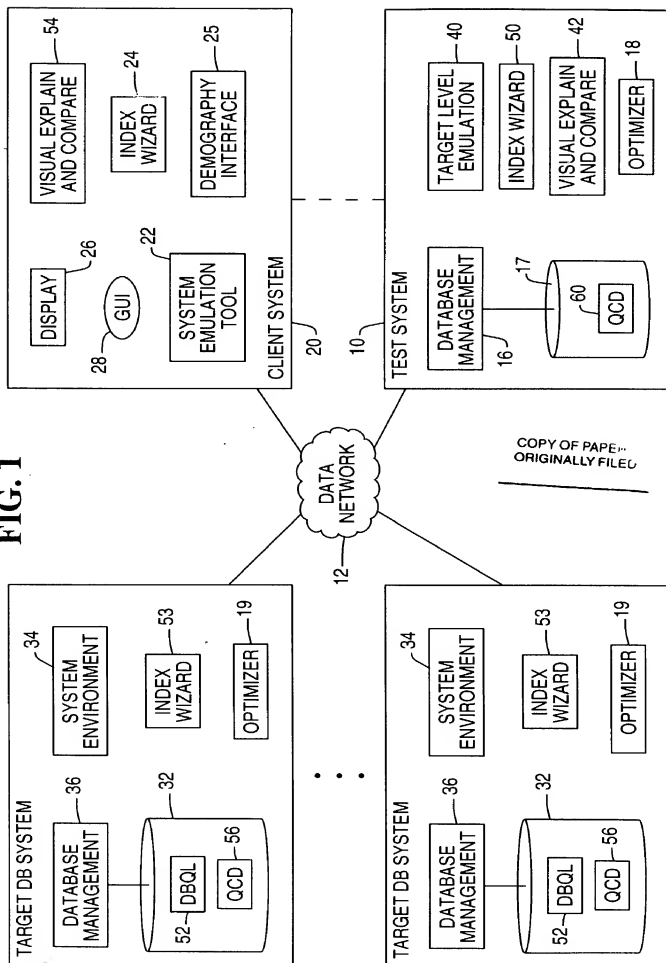
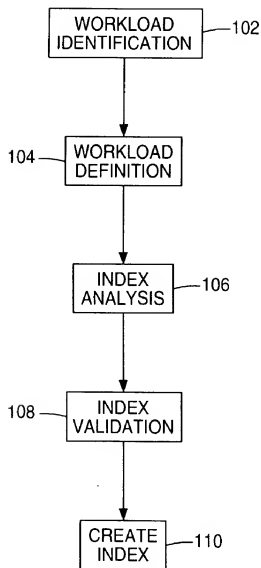


FIG. 1



COPY OF PAPER
ORIGINALLY FILED**FIG. 2**

COPY OF PAPERS
ORIGINALLY FILED

FIG. 3

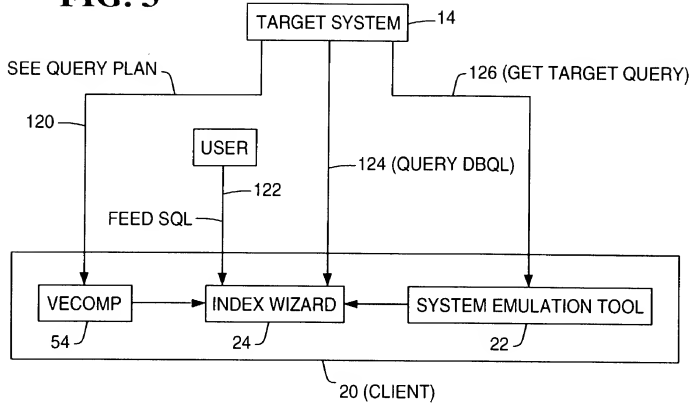
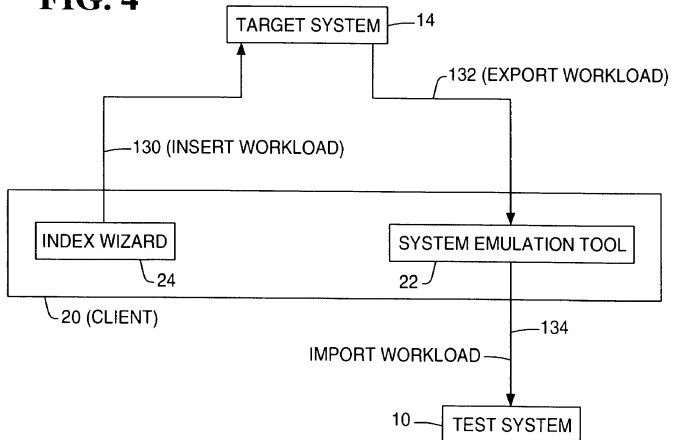
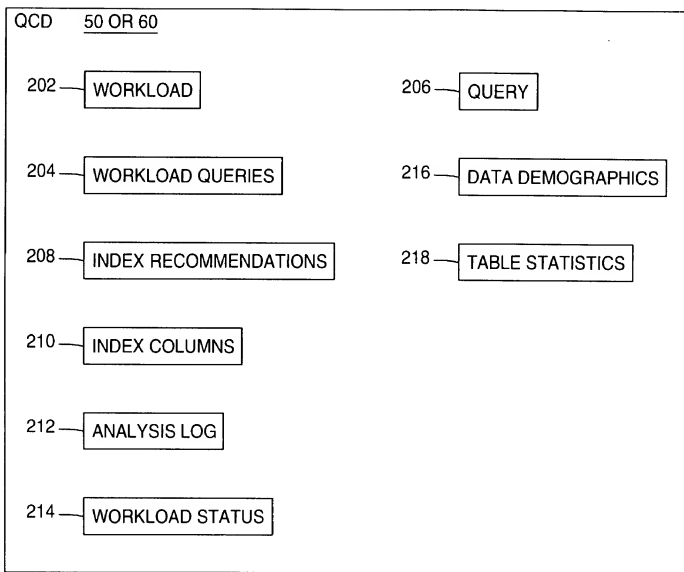


FIG. 4



COPY OF PAPER
ORIGINALLY FILED

FIG. 5

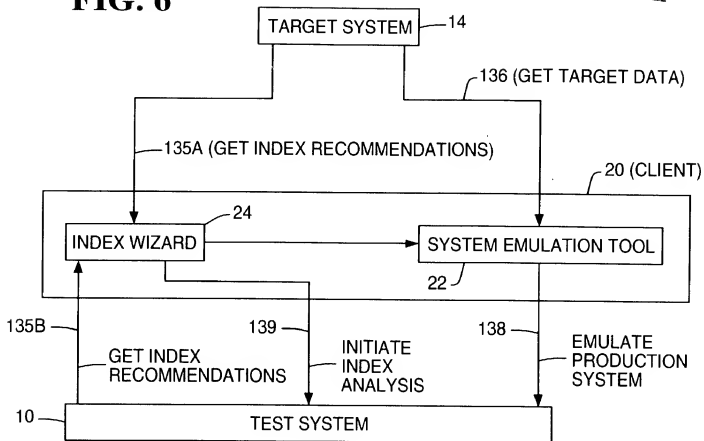
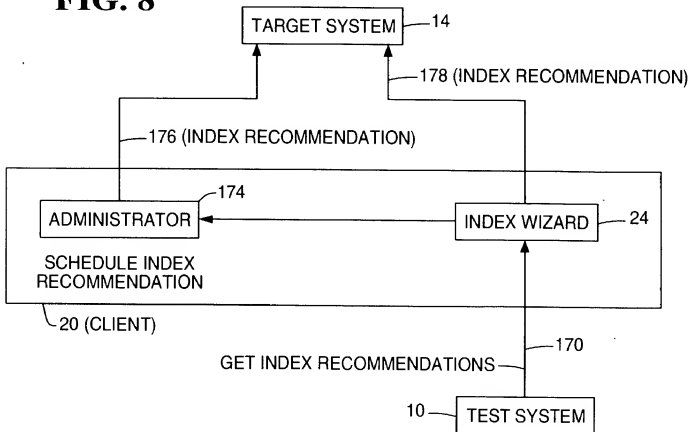
COPY OF PAPER
ORIGINALLY FILED**FIG. 6****FIG. 8**

FIG. 7

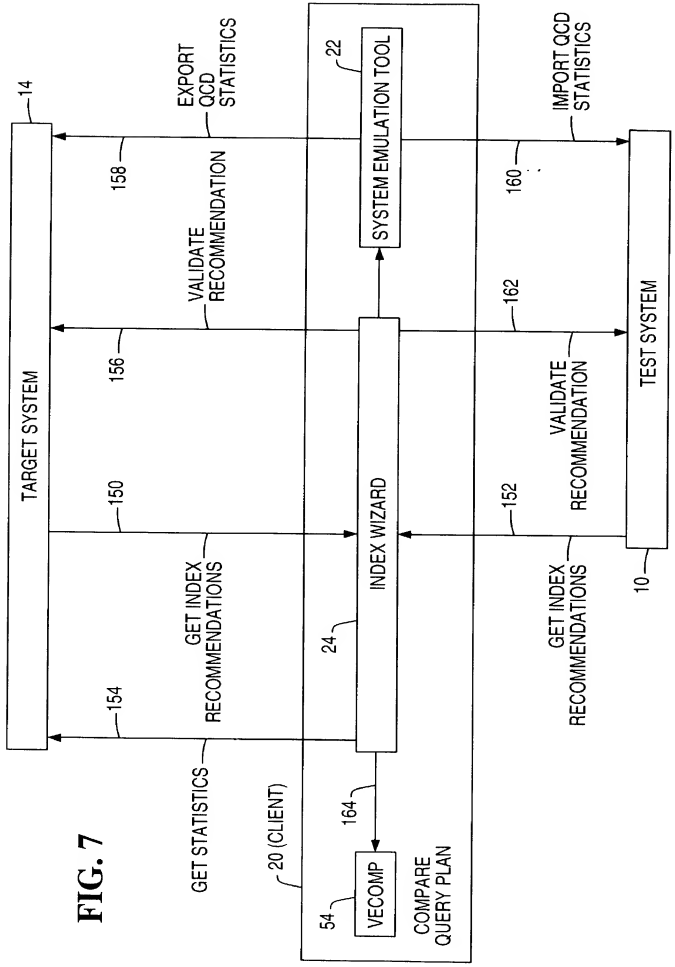


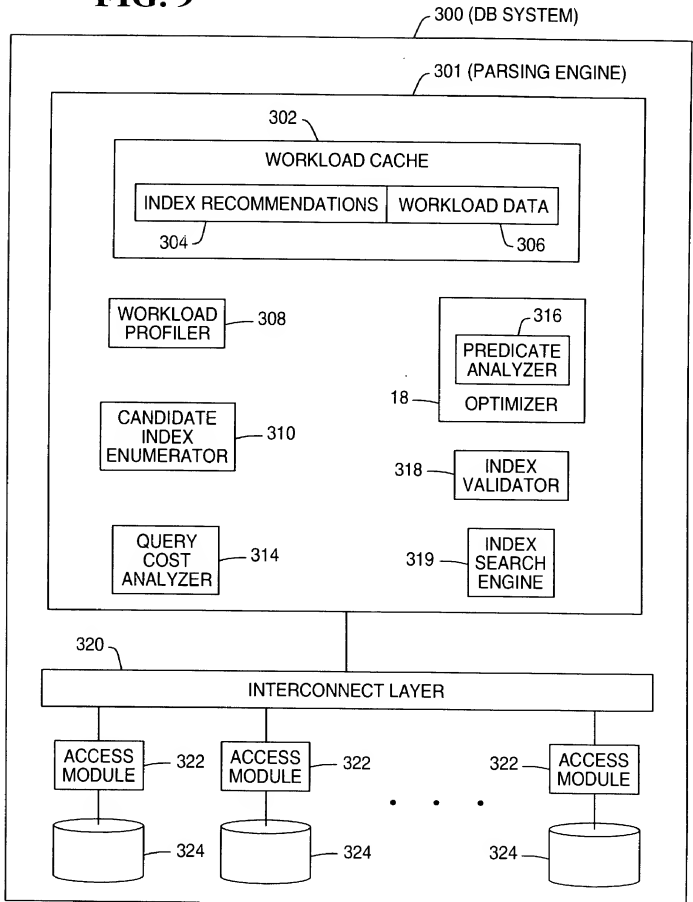
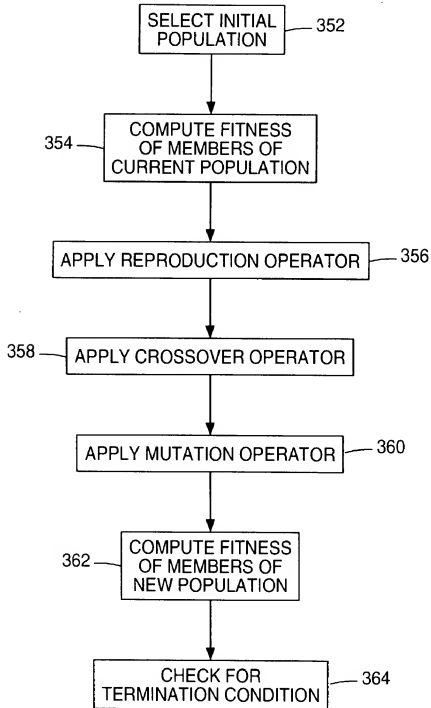
FIG. 9

FIG. 10

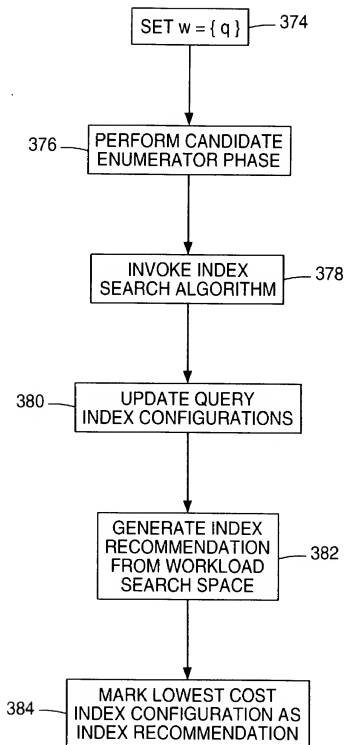
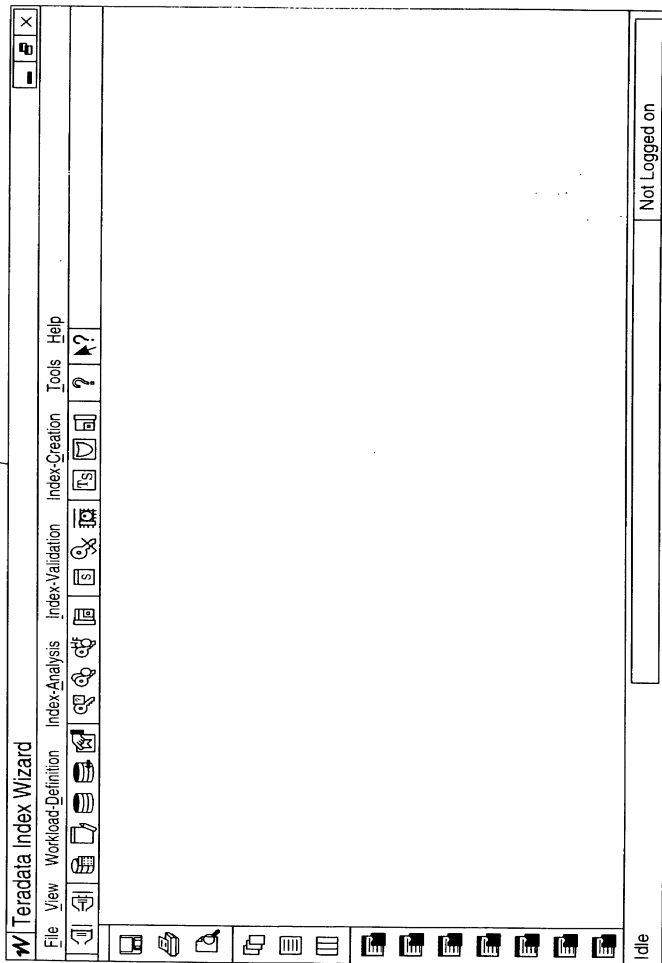
COPY OF PAPER,
ORIGINALLY FILED**FIG. 11**

FIG. 12

400



099977008 .021302

COPY OF PAPERS
ORIGINALLY FILED

FIG. 13

400

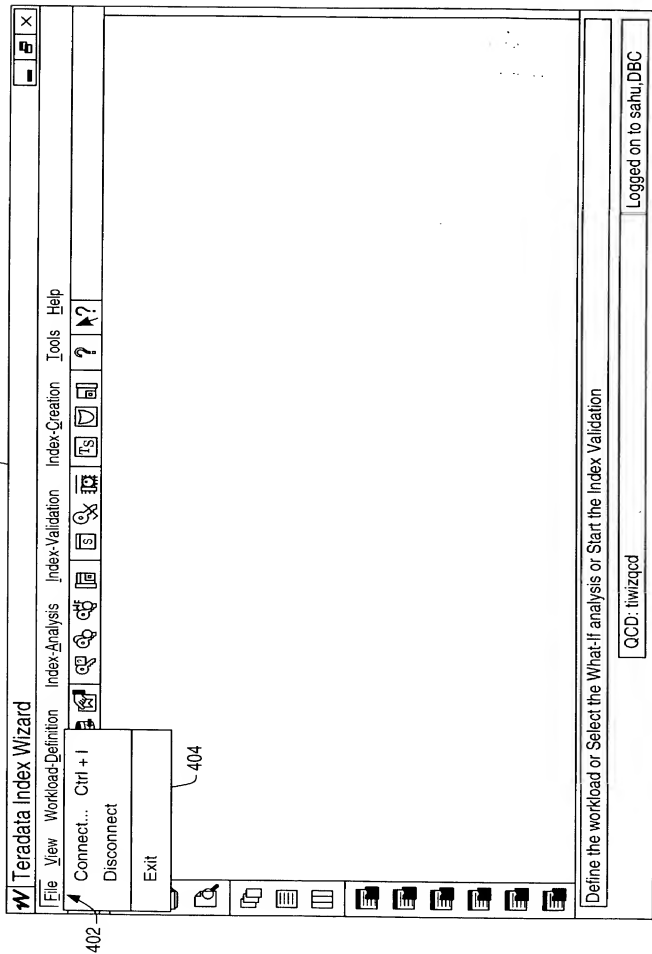
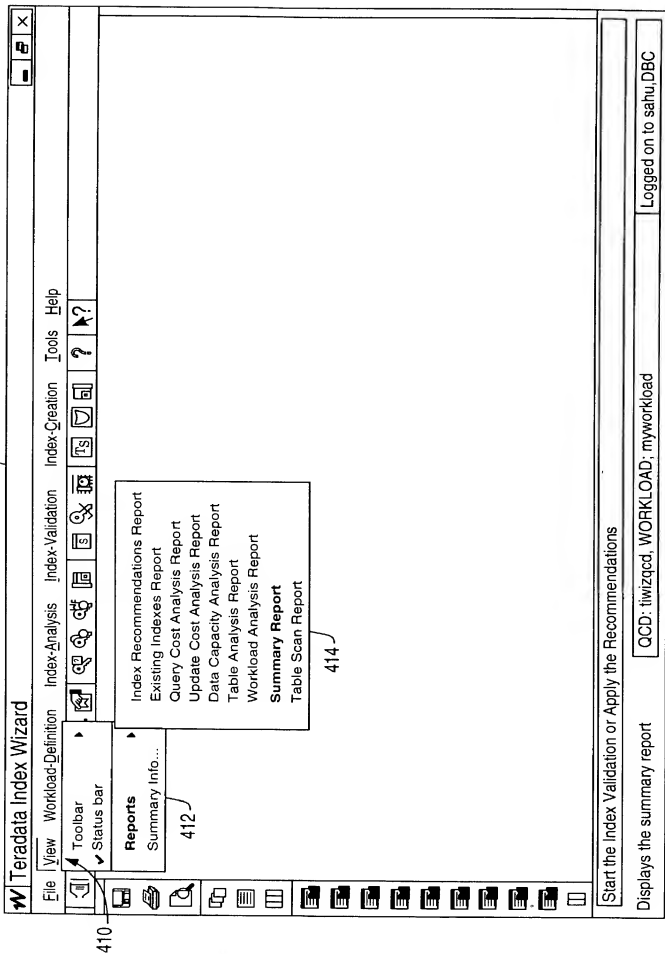


FIG. 14

400



COPY OF PAPER
ORIGINALLY FILED

2025 NOV 20 10:11:55

FIG. 15

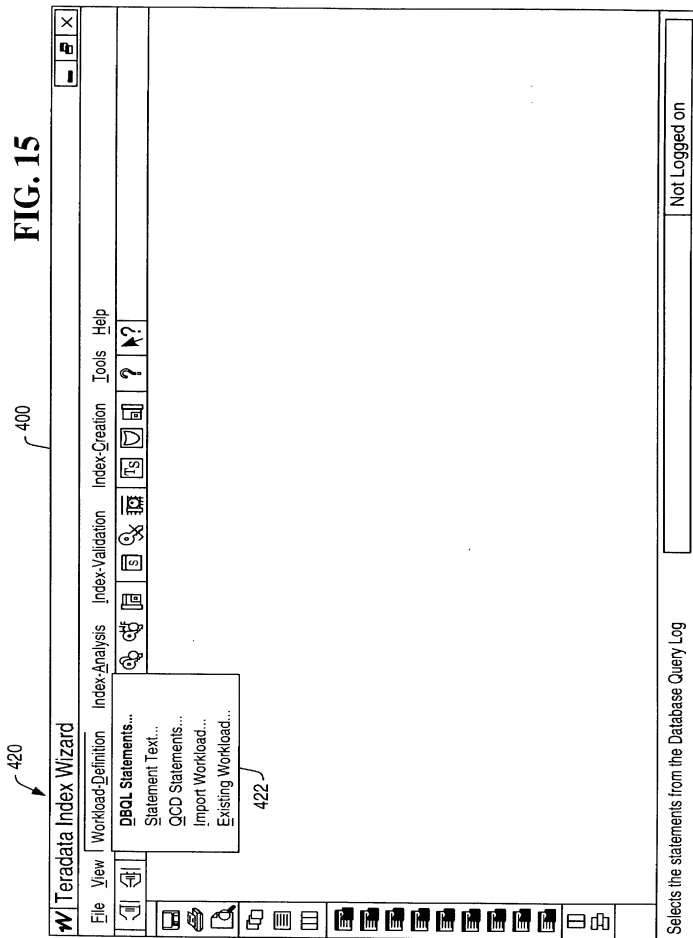


FIG. 16

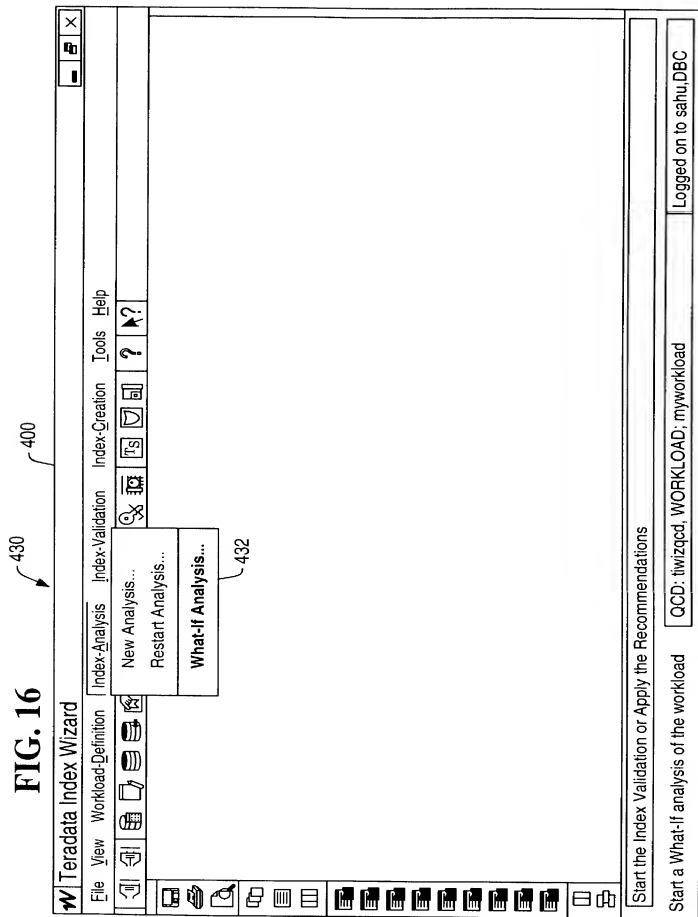


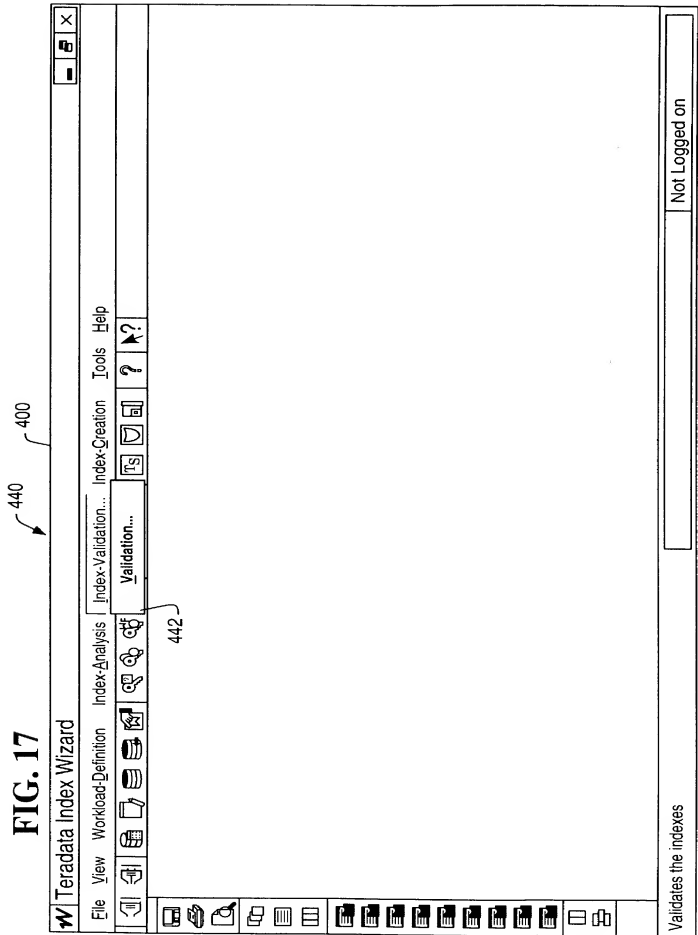
FIG. 17

FIG. 18

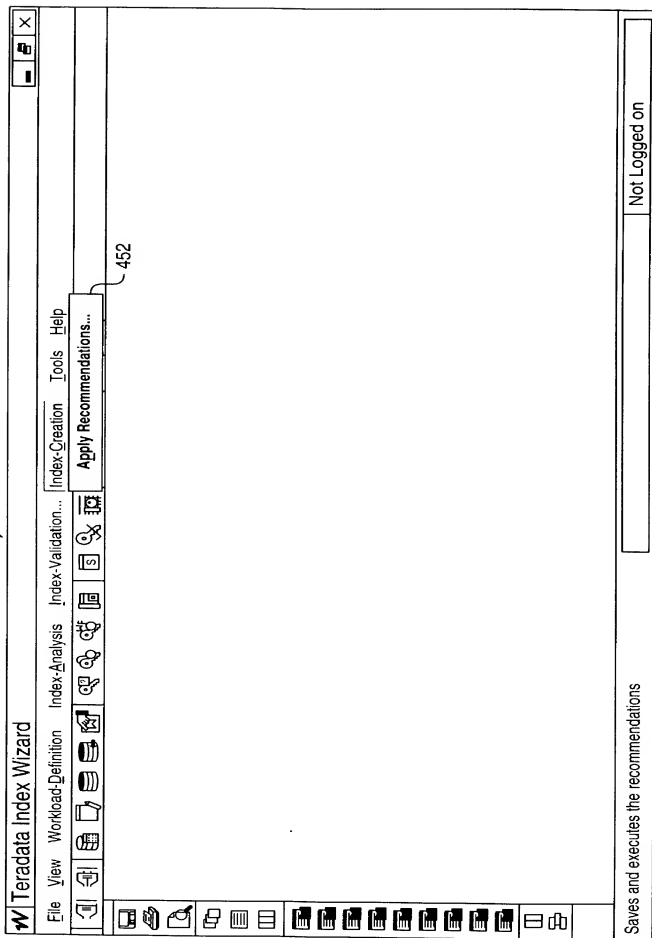
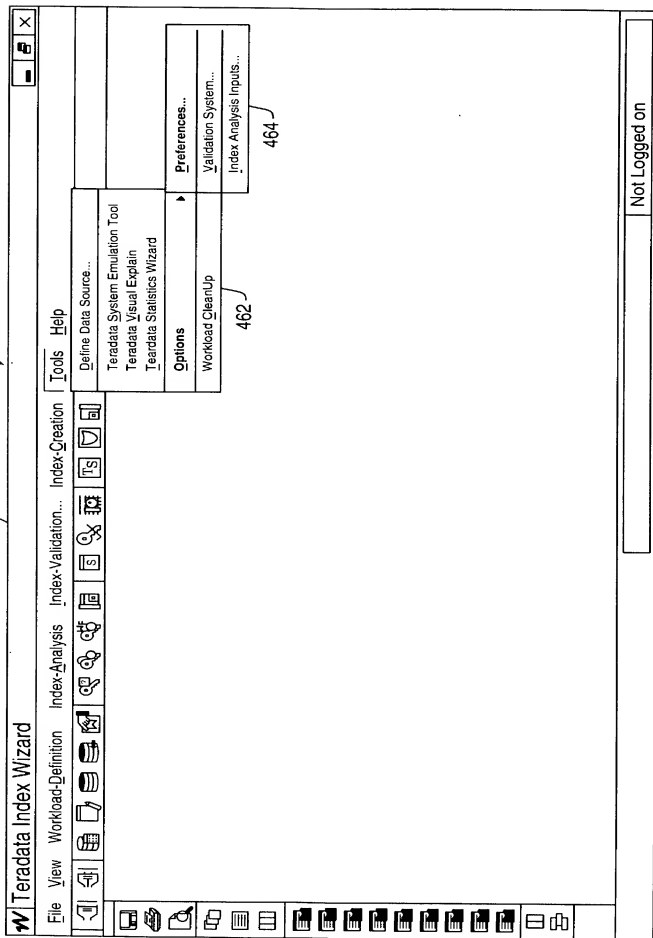


FIG. 19

460

















400



09977638 021302

COPY OF PAPERS
ORIGINALLY FILED

FIG. 20

	ICON	DESCRIPTION
800		TO LOGON TO THE TERADATA RDBMS SERVER
801		TO LOG OFF FROM THE TERADATA RDBMS SERVER
802		TO SELECT THE STATEMENTS FROM THE DBQL
803		TO ENTER THE SQL STATEMENTS OR SELECT THEM FROM MORE THAN ONE FILE
804		TO SELECT THE SQL STATEMENTS FROM THE QCD
805		TO IMPORT A WORKLOAD FROM A PRODUCTION SYSTEM
806		TO SELECT AN EXISTING WORKLOAD
807		TO SET/RESET THE INDEX ANALYSIS PARAMETERS
808		TO START INDEX ANALYSIS
809		TO PERFORM "WHAT-IF" ANALYSIS
810		TO RESTART INDEX ANALYSIS FROM A CHECKPOINT
811		TO DISPLAY SUMMARY INFORMATION
812		TO VALIDATE THE INDEXES
813		TO SCHEDULE THE CREATION OF INDEXES
814		TO VIEW THE HELP CONTENTS
815		TO GUIDE THE USER HOW TO USE HELP

COPY OF PAPER.
ORIGINALLY FILED

FIG. 21

500

Define Workload

DBQL Search Criteria

User Name: Account Name:

Start Time: End Time:

Row Count: I/O Count: Frequency:

Statement Text:

503

DBQL Statements

502

Selected	Frequency	Statement Text
<input type="text"/>		

◀ ▶

Workload Name:

COPY OF PAPERS
ORIGINALLY FILED

FIG. 22

510

Define Workload [?] [X]

SQL Statements

sel * from dbc.dbcinfotbl;

Frequency: 512

513

Selected Statements

Workload Name: 514

Frequency	Statement Text
1	sel * from dbc.dbcinfotbl;

COPY OF PAPERS
ORIGINALLY FILED

FIG. 23

520

Define Workload
? X

QCD Statements

QCD Name: Query Id: Query Tag:

Select	Query	Frequ	Statement Text
<input checked="" type="checkbox"/>	19	1	Insert explain into tiwizqcd sel * from query,rela
<input checked="" type="checkbox"/>	17	1	Insert explain into tiwizqcd sel * from query;;;
<input type="checkbox"/>	15	1	sel * from query,relation where query.queryid =
<input checked="" type="checkbox"/>	13	1	sel * from query,relation ,workload;;;
<input type="checkbox"/>	32	1	sel * from query,relation where relation.relation
<input checked="" type="checkbox"/>	11	1	sel * from query,relation where query.queryid =
<input checked="" type="checkbox"/>	9	1	sel * from query,relation ,workload where quer
<input type="checkbox"/>	30	1	sel * from query;;;
<input type="checkbox"/>	28	1	Insert explain into TIWizQCD sel * from relatio

◀ ▶

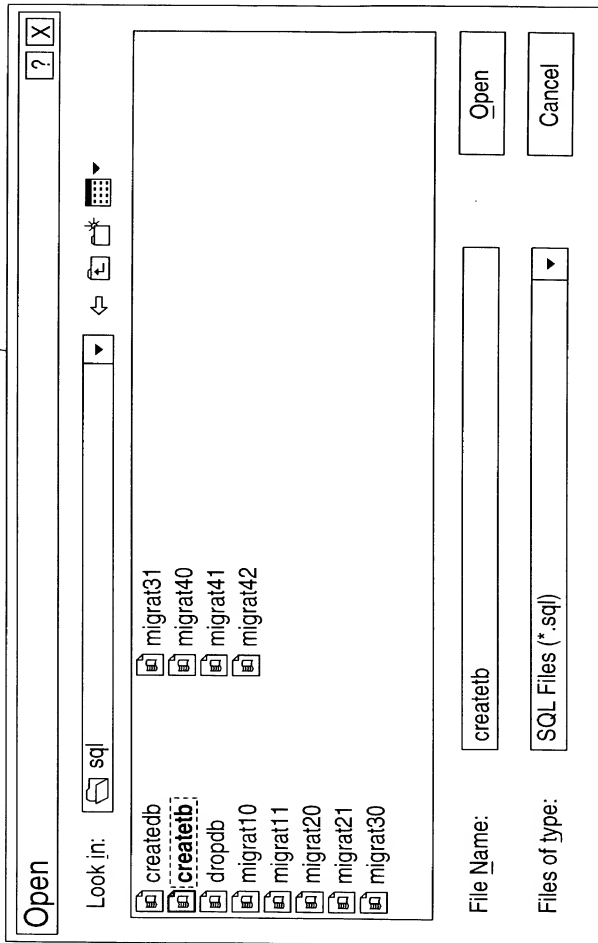
Workload Name:

524

522

FIG. 24

530



COPY OF PAPERS
ORIGINALLY FILED

62557028, 01/13/00

COPY OF PAPERS
ORIGINALLY FILED

FIG. 25

540

Define Workload ? X

Select SQL Statements

542

Selected	Frequency	Statement Text
<input checked="" type="checkbox"/>	1	SELECT DISTINCT t_2.t_2_c_2- t_
<input type="checkbox"/>	1	SELECT NULLIF (t_4.t_4_c_3
<input checked="" type="checkbox"/>	1	DELETE FROM t_4 WHERE NO
<input checked="" type="checkbox"/>	1	DELETE t_1 WHERE NULLIF (t_1
<input type="checkbox"/>	1	INSERT INTO t_2 (t_2.t_2_c_1 , t_2.
<input checked="" type="checkbox"/>	1	UPDATE t_1 FROM t_5, t_2, t_3 SET

◀ ▶

Workload Name:

COPY OF PAPER
ORIGINALLY FILED

FIG. 26

550

Existing Workload
?
X

Workload Statements

QCD Name:

TIWizQCD

...

Workload Name:

MyWorkload

▼

State	Frequ	Statement Text	
1	1	sel * from query;;	▲
2	1	sel * from relation;;	▼
◀ ▶			

Workload Status

Recommend	Index Tag	Validate Sy	Validate Ti	Validate Q	Recom	
2	myindextag	deepika	7:43.670000	tiwizqcd	NONE	▲
1	MyIndexT ac	deepika	7:43.670000	tiwizqcd	NONE	▲
2	myindextag	deepika	7:43.670000	tiwizqcd	NONE	▼
◀ ▶						

Modify Options

☐ Qcd Statements

☐ Query Text

554

556

Modify

OK

Cancel

Existing Workload

Workload Statements

QCD Name:

TIWizQCD

...

Workload Name:

MyWorkload

Selec	Stater	Frequ	Statement Text
<input checked="" type="checkbox"/>	1	1	sel * from query;;
<input type="checkbox"/>	2	1	sel * from relation;;

Workload Status

Recommend	Index Tag	Validate Sy	Validate Ti	Validate Q	Recom
2	myindextag	deepika	7:43.670000	tiwizqcd	NONE
1	MyIndexT ac	deepika	7:43.670000	tiwizqcd	NONE
2	myindextag	deepika	7:43.670000	tiwizqcd	NONE

Modify Options

☐ Qcd Statements
 ☐ Query Text

New Workload Name:

559

Update

OK

Cancel

FIG. 27

COPY OF PAPERS
ORIGINALLY FILED

550A 552A 558

COPY OF PAPERS
ORIGINALLY FILED

FIG. 28

560

Index Analysis Parameters

Index Analysis Inputs

☒ Keep existing indexes

Maximum Columns per Index: 4

Maximum Indexes per Table: 16

Index Search Space: 256

Change Rate Threshold: 5

OK Set Defaults Cancel

COPY OF PAPER
ORIGINALLY FILED

FIG. 29

570

Index Analysis
? X

Workload Statements 572

Statement Id	Frequency	Statement Text	
3	1	sel * from query,relation where relation.relationid	▲
1	1	sel * from query;;	
2	1	sel * from relation;;	▼

Select Tables

Selected	Database Name	Table Name	Access
<input checked="" type="checkbox"/>	tiwizqcd	QUERY	3
<input checked="" type="checkbox"/>	tiwizqcd	RELATION	2

574

Select All
Deselect All

Restart Parameters

Index Tag: MyIndexTag Checkpoint Frequency:

Save Options

☐ Save Recommendations in Files
☐ Save Execution Plans in Files

OK
Cancel

COPY OF PAPERS
ORIGINALLY FILED**FIG. 30**

580

Restart Index Analysis [?] [X]

Restart parameters

QCD Name: TIWizQCD

Workload Name: MyWorkload ▼

Index Tag: MyIndexTag ▼

Save option

☒ Save Recommendations

☐ Save execution plans

OK Cancel

What-if Analysis

?

X

Workload Details

QCD Name:

tlwizqcd

...

Workload Name:

MyWorkload

Index Tag:

MyIndextag

1

1

sel * from query;;

2

1

sel * from relation;;

3

1

sel * from query,relation where relationid = query

Statement

Frequency

Statement Text

View Recom...

View Report...

Analysis

DDL Text:

CREATE INDEX index_5 (TableName) on Relation;

Add →

Rem

Rem All

Selected DDL Statements:

Statement Text

COLLECT STATS Relation INDEX index_5

COLLECT INDEX index_5

COLLECT STATS Relation INDEX index_5

COLLECT INDEX index_5 (TableName)

View Statement

Browse...

View Graph

Analyze

Conclusion: An overall improvement of 31.34 in the performance of the system

OK

Compare...

Cancel

FIG. 31

FIG. 32

620

Index Recommendation Report

QCD Name: tiwizqcd

Workload Name: myworkload

Index Tag: myindextag

Index Recommendation Report

Table Name	Index Tag	Index T ...	Size(KB)	Time Esti...	Index DDL	Stats DDL
QUERY	MyIndextag	USI	10.00	59.00	CREATE INDEX...	COLLECT STATS
RELATION	MyIndextag	USI	10.00	59.00	CREATE INDEX...	COLLECT STATS
RELATION	MyIndextag	USI	10.00	59.00	CREATE INDEX...	COLLECT STATS

622

FIG. 33

Existing Indexes Report

Existing Indexes Report

QCD Name: TIWizQCD Workload Name: myworkload Index Tag: MyIndexTag

Table Name	Index Name	Index Type	Columns
QUERY	PK_QueryID	P	QueryID
RELATION	PK_RelationKey	P	RelationKey

2005/05/08 10:01:00

COPY OF PAPERS
ORIGINALLY FILED

FIG. 34

640

Query Cost Analysis Report

Query Cost Analysis Report

QCD Name: TIWizQCD

Workload Name: myworkload

Index Tag: MyIndexTag

Query Type	Cost(with existing i...	Cost(with recommended...	Percentage Cha...	Query Text...
SELECT	100.00	50.00	100.00	sel * from query,relation w
SELECT	100.00	50.00	100.00	sel * from query;;
SELECT	100.00	50.00	100.00	sel * from relation;;

642

00977038 1021302

COPY OF PAPERS
ORIGINALLY FILED

FIG. 35

650

Update Cost Report

Update Cost Report

QCD Name: MyTextQCD Workload Name: MyWorkload Index Tag: Index1

Table Name	Indexes	Update Cost
No rows returned		

652

65577588 . 021302

COPY OF PAPERS
ORIGINALLY FILED

660

662-

FIG. 37

670

Table Usage Report		
<div> <div>Table Usage Report</div> <div> <div>QCD Name: TIWIZQCD</div> <div>Workload Name: myworkload</div> <div>Index Tag: MyIndexTag</div> </div> </div>		
Table Name	Access Count	Statement Text
QUERY	1	sel * from query,relation where relation.relationid = query.queryid and query.qu
RELATION	1	sel * from query,relation where relation.relationid = query.queryid and query.qu
QUERY	1	sel * from query;;
RELATION	1	sel * from relation;;

672

69977638 . 021352

COPY OF PAPERS
ORIGINALLY FILED

FIG. 38

680

Workload Analysis Report

QCD Name: TIWizQCD

Workload Name: myworkload

Index Tag: MyIndexTag

Workload Analysis Report

State...	Cost	Relative...	Table Na...	Columns	Columns involve...	Statement T
SELE...	10...	3.70	RELATION	RelationKey, Cardinality, Geogl...	?	sel * from q
SELE...	10...	3.70	QUERY	QueryText, QUERYNAME, Que	QueryID, QUER...	sel * from q
SELE...	10...	3.70	QUERY	UDB_KEY, QUERYNAME, Dat...	?	sel * from q
SELE...	10...	3.70	RELATION	SortInfo, VIEWNAME, UDB_KEY...	?	sel * from q

682

FIG. 39

690

Summary Report

Summary Report

QCD Name: TIWIZQCD

Workload Name: myworkload

Index Tag: MyIndexTag

Table Name	Index Name	Index DDL	Stats DDL
QUERY	MyIndextag	CREATE INDEX index_3 (QueryText) on Query;	COLLECT STATS Query IND
RELATION	MyIndextag	CREATE INDEX index_4 (name) on Relation;	COLLECT STATS Relation I
RELATION	MyIndextag	CREATE INDEX index_4 (name,TableName) o...	COLLECT STATS Relation I

692

2025 NOV 06 15:11:00

COPY OF PAPERS
ORIGINALLY FILED

FIG. 40

700

Table Scan Report					
QCD Name: tiwizqcd		Workload Name: myworkload			
Owner	Table Name	Cardinality	AMPs Retrieves...	Geograph...	Statement Text
tiwizqcd	QUERY	45.00	All AMP Retrieve	built locally	sel * from query,relation where query que
tiwizqcd	QUERY	45.00	All AMP Retrieve	built locally	sel * from query,relation,workload where
tiwizqcd	QUERY	45.00	All AMP Retrieve	built locally	sel * from query,relation,workload;;
tiwizqcd	RELATION	282.00	All AMP Retrieve	built locally	sel * from query,relation where query que
tiwizqcd	RELATION	282.00	All AMP Retrieve	built locally	sel * from query,relation,workload where
tiwizqcd	RELATION	282.00	All AMP Retrieve	built locally	sel * from query,relation,workload;;
tiwizqcd	WORKLOAD	2.00	Single AMP Retr...	built locally	sel * from query,relation,workload where
tiwizqcd	WORKLOAD	2.00	All AMP Retrieve	built locally	sel * from query,relation,workload;;

702

0027708# .061302

COPY OF PAPERS
ORIGINALLY FILED

COPY OF PAPERS
ORIGINALLY FILED

FIG. 41

710

Workload Clean Up
? X

Workload Statements

QCD Name: TIWizQCD ...

Workload Name: MyWorkload ▼

State	Frequ	Statement Text	▲
1	1	sel * from query;;	
2	1	sel * from relation;;	▼

◀
▶

Workload Status

714

Selec	Recommend	Index Tag	Validate Sy	Validate T	Validate Q	▲
<input checked="" type="checkbox"/>	2	myindextag	deepika	7:43.670000	tiwizqcd	
<input checked="" type="checkbox"/>	1	MyIndexT ac	deepika	7:43.670000	tiwizqcd	
<input checked="" type="checkbox"/>	2	myindextag	deepika	7:43.670000	tiwizqcd	▼

◀
▶

Delete Options

☐ Delete Workload

☐ Delete Plans

☒ Delete Analysis

Delete

OK

Cancel

FIG. 42

730

Load Recommendations [?] [X]

☒ Load Recommendations from QCD

☐ Load Recommendations from file

TIWizQCD, MyWorkload

732 Browse...

734 [OK] Cancel

FIG. 43

740

Load Recommendations Details [?] [X]

QCD Name: TIWizQCD

Workload Name: MyWorkload ▼

Index Tag: myindextag ▼

742 [OK] Cancel

COPY OF PAPERS
ORIGINALLY FILED

FIG. 44

750

Index Validation

Validate Indexes _____

Select indexes to be validated: 752 ☒ Validate on another system

Sele	Table	Index	Index	Columns	Index DDL
	QUER	MyInd		Query Text	CREATE INDEX index_3 (Query T
	RELA	MyInd		name	CREATE INDEX index_4 (name) o
	RELA	MyInd		TableName	CREATE INDEX index_4 (name T

754 756

Validation Results _____

758

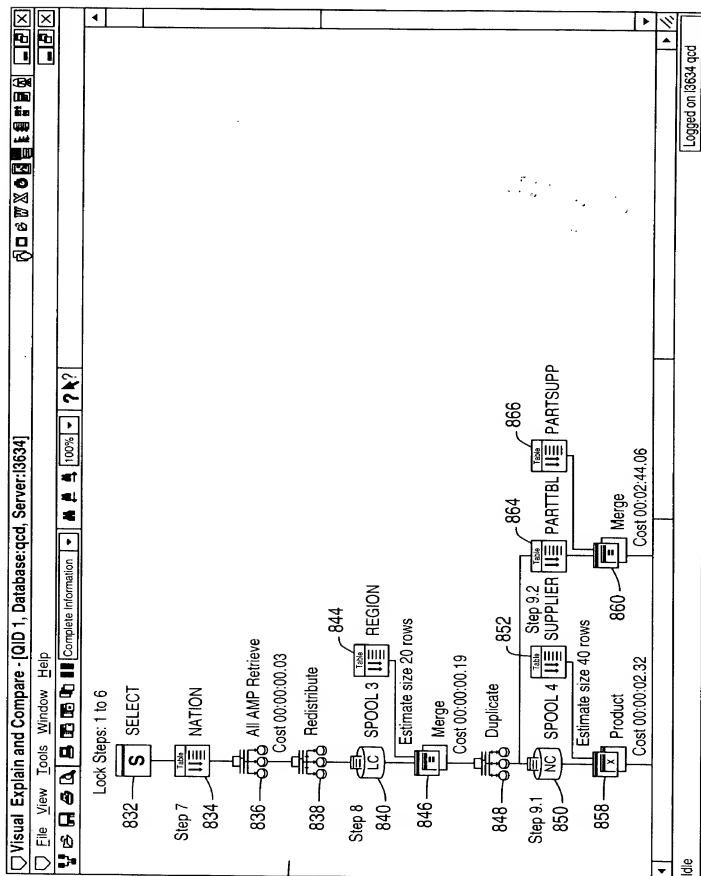
Table Name	Index Name	% Sample on which statistics were collected
QUERY		10
RELATION		10
RELATION		10

Conclusion: An overall improvement of 38.24 in the performance of the system

Compare Options:

760

762





910-

[illegible]